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<input type="checkbox"/>	L8	L7 not l6	2
<input type="checkbox"/>	L7	L4 and (muta\$ or variant)	16
<input type="checkbox"/>	L6	L5 and l4	14
<input type="checkbox"/>	L5	glycosidase with (muta\$ or variant)	158
<input type="checkbox"/>	L4	glycosidase with nucleophile	18
<input type="checkbox"/>	L3	L2 and (muta\$ or variant)	151
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☐ 1. Document ID: US 20040142856 A1

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L1: Entry 1 of 13

File: PGPB

Jul 22, 2004

PGPUB-DOCUMENT-NUMBER: 20040142856
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20040142856 A1

TITLE: Glycoconjugation methods and proteins/peptides produced by the methods

PUBLICATION-DATE: July 22, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
DeFrees, Shawn	North Wales	PA	US	
Zopf, David	Wayne	PA	US	
Bayer, Robert	San Diego	CA	US	
Bowe, Caryn	Doylestown	PA	US	
Hakes, David	Willow Grove	PA	US	
Chen, Xi	Lansdale	PA	US	

US-CL-CURRENT: 514/8; 435/68.1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWAC	Draw D
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☐ 2. Document ID: US 20040137557 A1

L1: Entry 2 of 13

File: PGPB

Jul 15, 2004

PGPUB-DOCUMENT-NUMBER: 20040137557
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20040137557 A1

TITLE: Remodeling and glycoconjugation of peptides

PUBLICATION-DATE: July 15, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
DeFrees, Shawn	North Wales	PA	US	
Zopf, David	Wayne	PA	US	

Bayer, Robert	San Diego	CA	US
Bowe, Caryn	Doylestown	PA	US
Hakes, David	Willow Grove	PA	US
Chen, Xi	Lansdale	PA	US

US-CL-CURRENT: 435/68.1; 530/322

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWAC	Draw D
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☐ 3. Document ID: US 20040132640 A1

L1: Entry 3 of 13

File: PGPB

Jul 8, 2004

PGPUB-DOCUMENT-NUMBER: 20040132640

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20040132640 A1

TITLE: Glycopegylation methods and proteins/peptides produced by the methods

PUBLICATION-DATE: July 8, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
DeFrees, Shawn	North Wales	PA	US	
Zopf, David	Wayne	PA	US	
Bayer, Robert	San Diego	CA	US	
Bowe, Caryn	Doylestown	PA	US	
Hakes, David	Willow Grove	PA	US	
Chen, Xi	Lansdale	PA	US	

US-CL-CURRENT: 514/8; 530/395

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWAC	Draw D
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☐ 4. Document ID: US 20040126838 A1

L1: Entry 4 of 13

File: PGPB

Jul 1, 2004

PGPUB-DOCUMENT-NUMBER: 20040126838

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20040126838 A1

TITLE: Follicle stimulating hormone: remodeling and glycoconjugation of FSH

PUBLICATION-DATE: July 1, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
DeFrees, Shawn	North Wales	PA	US	

Zopf, David	Wayne	PA	US
Bayer, Robert	San Diego	CA	US
Bowe, Caryn	Doylestown	PA	US
Hakes, David	Willow Grove	PA	US
Chen, Xi	Lansdale	PA	US

US-CL-CURRENT: 435/68.1; 530/397

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KIMC	Draw. De
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☐ 5. Document ID: US 20040115168 A1

L1: Entry 5 of 13

File: PGPB

Jun 17, 2004

PGPUB-DOCUMENT-NUMBER: 20040115168
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20040115168 A1

TITLE: Interferon beta: remodeling and glycoconjugation of interferon beta

PUBLICATION-DATE: June 17, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
DeFrees, Shawn	North Wales	PA	US	
Zopf, David	Wayne	PA	US	
Bayer, Robert	San Diego	CA	US	
Bowe, Caryn	Doylestown	PA	US	
Hakes, David	Willow Grove	PA	US	
Chen, Xi	Lansdale	PA	US	

US-CL-CURRENT: 424/85.6; 435/68.1, 530/351

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KIMC	Draw. De
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☐ 6. Document ID: US 20040096465 A1

L1: Entry 6 of 13

File: PGPB

May 20, 2004

PGPUB-DOCUMENT-NUMBER: 20040096465
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20040096465 A1

TITLE: Novel receptors for \$1(helicobater pyroli) and use thereof

PUBLICATION-DATE: May 20, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
------	------	-------	---------	---------

h e b b g e e e f e f e f b e

Miller-Podraza, Halina	Hind?aring;s	US
Teneberg, Susann	Goteb?ouml;rg	SE
Angstrom, Jonas	G?ouml;teborg	SE
Karlsson, Karl-Anders	Vantaa	SE
Natunen, Jari		SE

US-CL-CURRENT: 424/234.1; 514/54, 536/53

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KIMC	Draw De
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☐ 7. Document ID: US 20040091977 A1

L1: Entry 7 of 13

File: PGPB

May 13, 2004

PGPUB-DOCUMENT-NUMBER: 20040091977
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20040091977 A1

TITLE: Mehtod for the modification of polymeric carbohydrate materials

PUBLICATION-DATE: May 13, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Teeri, Tuula Tellervo	Taby		SE	
Brumer III, Harry	Johanneshov		SE	

US-CL-CURRENT: 435/101; 536/56

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KIMC	Draw De
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☐ 8. Document ID: US 20040082026 A1

L1: Entry 8 of 13

File: PGPB

Apr 29, 2004

PGPUB-DOCUMENT-NUMBER: 20040082026
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20040082026 A1

TITLE: Interferon alpha: remodeling and glycoconjugation of interferon alpha

PUBLICATION-DATE: April 29, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
DeFrees, Shawn	North Wales	PA	US	
Zopf, David	Wayne	PA	US	
Bayer, Robert	San Diego	CA	US	
Bowe, Caryn	Doylestown	PA	US	

Hakes, David	Willow Grove	PA	US
Chen, Xi	Lansdale	PA	US

US-CL-CURRENT: 435/68.1; 530/351

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 9. Document ID: US 20040077836 A1

L1: Entry 9 of 13

File: PGPB

Apr 22, 2004

PGPUB-DOCUMENT-NUMBER: 20040077836
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20040077836 A1

TITLE: Granulocyte colony stimulating factor: remodeling and glycoconjugation of G-CSF

PUBLICATION-DATE: April 22, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
DeFrees, Shawn	North Wales	PA	US	
Zopf, David	Wayne	PA	US	
Bayer, Robert	San Diego	CA	US	
Bowe, Caryn	Doylestown	PA	US	
Hakes, David	Willow Grove	PA	US	
Chen, Xi	Lansdale	PA	US	

US-CL-CURRENT: 530/351; 435/68.1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 10. Document ID: US 20040063911 A1

L1: Entry 10 of 13

File: PGPB

Apr 1, 2004

PGPUB-DOCUMENT-NUMBER: 20040063911
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20040063911 A1

TITLE: Protein remodeling methods and proteins/peptides produced by the methods

PUBLICATION-DATE: April 1, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
DeFrees, Shawn	North Wales	PA	US	
Zopf, David	Wayne	PA	US	
Bayer, Robert	San Diego	CA	US	

Hakes, David	Willow Grove	PA	US
Chen, Xi	Lansdale	PA	US

US-CL-CURRENT: 530/351; 435/68.1, 530/395

Full	Title	Creation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw D
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Terms	Documents
glycosidase and glycosynthase	13

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Search Results - Record(s) 11 through 13 of 13 returned.

☐ 11. Document ID: US 20040043446 A1

Using default format because multiple data bases are involved.

L1: Entry 11 of 13

File: PGPB

Mar 4, 2004

PGPUB-DOCUMENT-NUMBER: 20040043446
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20040043446 A1

TITLE: Alpha galactosidase a: remodeling and glycoconjugation of alpha galactosidase A

PUBLICATION-DATE: March 4, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
DeFrees, Shawn	North Wales	PA	US	
Zopf, David	Wayne	PA	US	
Bayer, Robert	San Diego	CA	US	
Bowe, Caryn	Doylestown	PA	US	
Hakes, David	Willow Grove	PA	US	
Chen, Xi	Lansdale	PA	US	

US-CL-CURRENT: [435/68.1](#); [435/193](#), [435/208](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 12. Document ID: US 20030138880 A1

L1: Entry 12 of 13

File: PGPB

Jul 24, 2003

PGPUB-DOCUMENT-NUMBER: 20030138880
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20030138880 A1

TITLE: Solid-phase synthesis of oligosaccharides and glycopeptides using glycosynthases

PUBLICATION-DATE: July 24, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
------	------	-------	---------	---------

Withers, Stephen G.	Vancouver	CA
Jensen, Knud J.	Copenhagen	DK
Petersen, Lars	Copenhagen	DK
Tolborg, Jakob L.	Ballerup	DK

US-CL-CURRENT: 435/68.1; 435/101, 435/85

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KIMC	Draw D
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☐ 13. Document ID: WO 3018605 A2

L1: Entry 13 of 13

File: EPAB

Mar 6, 2003

PUB-NO: WO003018605A2

DOCUMENT-IDENTIFIER: WO 3018605 A2

TITLE: SOLID-PHASE SYNTHESIS OF OLIGOSACCHARIDES AND GLYCOPEPTIDES USING
GLYCOSYNTASES

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	KIMC	Draw D
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Terms	Documents
glycosidase and glycosynthase	13

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- ☐ 1. [20040142856](#). 09 Apr 03. 22 Jul 04. Glycoconjugation methods and proteins/peptides produced by the methods. DeFrees, Shawn, et al. 514/8; 435/68.1 A61K038/16 C12P021/06.
- ☐ 2. [20040137557](#). 05 Nov 02. 15 Jul 04. Remodeling and glycoconjugation of peptides. DeFrees, Shawn, et al. 435/68.1; 530/322 A61K038/16 C12P021/06 C07K009/00.
- ☐ 3. [20040132640](#). 09 Apr 03. 08 Jul 04. Glycopegylation methods and proteins/peptides produced by the methods. DeFrees, Shawn, et al. 514/8; 530/395 A61K038/16 C07K014/00 C07K001/113.
- ☐ 4. [20040126838](#). 09 Apr 03. 01 Jul 04. Follicle stimulating hormone: remodeling and glycoconjugation of FSH. DeFrees, Shawn, et al. 435/68.1; 530/397 C12Q001/68 C12P021/06.
- ☐ 5. [20040115168](#). 09 Apr 03. 17 Jun 04. Interferon beta: remodeling and glycoconjugation of interferon beta. DeFrees, Shawn, et al. 424/85.6; 435/68.1 530/351 C12P021/06 A61K038/21.
- ☐ 6. [20040096951](#). 17 Nov 03. 20 May 04. Crystal structures of retaining glycosyltransferases. Withers, Stephen G., et al. 435/193; 435/87 536/53 C12P019/38 C12N009/10 C08B037/00.
- ☐ 7. [20040091977](#). 09 Oct 03. 13 May 04. Method for the modification of polymeric carbohydrate materials. Teeri, Tuula Tellervo, et al. 435/101; 536/56 C08B001/00 C12P019/04.
- ☐ 8. [20040082026](#). 09 Apr 03. 29 Apr 04. Interferon alpha: remodeling and glycoconjugation of interferon alpha. DeFrees, Shawn, et al. 435/68.1; 530/351 C12P021/06 C07K014/54.
- ☐ 9. [20040077836](#). 09 Apr 03. 22 Apr 04. Granulocyte colony stimulating factor: remodeling and glycoconjugation of G-CSF. DeFrees, Shawn, et al. 530/351; 435/68.1 C12P021/06 C07K014/535.
- ☐ 10. [20040063911](#). 09 Apr 03. 01 Apr 04. Protein remodeling methods and proteins/peptides produced by the methods. DeFrees, Shawn, et al. 530/351; 435/68.1 530/395 C12P021/06 C07K014/54.

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Terms	Documents
glycosidase with nucleophile	18

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- ☐ 11. [20040043446](#). 09 Apr 03. 04 Mar 04. Alpha galactosidase a: remodeling and glycoconjugation of alpha galactosidase A. DeFrees, Shawn, et al. 435/68.1; 435/193 435/208 C12P021/06 C12N009/40 C12N009/10.
- ☐ 12. [20030199072](#). 14 Nov 02. 23 Oct 03. Crystal and structure of a thermostable glycosol hydrolase and use thereof, and modified proteins. Crennell, Susan J., et al. 435/200; 702/19 G06F019/00 G01N033/48 G01N033/50 G01N031/00 C12N009/24.
- ☐ 13. [20030138880](#). 26 Aug 02. 24 Jul 03. Solid-phase synthesis of oligosaccharides and glycopeptides using glycosynthases. Withers, Stephen G., et al. 435/68.1; 435/101 435/85 C12P021/06 C12P019/28 C12P019/04.
- ☐ 14. [20030100749](#). 17 Apr 01. 29 May 03. Methods and compositions for synthesis of oligosaccharides using mutant glycosidase enzymes. Withers, Stephen G., et al. 536/123.1; 435/100 435/101 435/201 536/123.13 C07H003/04 C07H003/06 C12P019/12 C12P019/04 C12N009/26 C12N009/24.
- ☐ 15. [6506592](#). 18 Aug 99; 14 Jan 03. Hyperthermophilic alpha-glucosidase gene and its use. Blum; Paul. 435/262; 435/183 435/195 435/200 435/204 435/205 435/207 435/208 435/267 435/274. C07C003/00 C07G017/00 C12N009/00 C12N009/14.
- ☐ 16. [5716812](#). 12 Dec 95; 10 Feb 98. Methods and compositions for synthesis of oligosaccharides, and the products formed thereby. Withers; Stephen G., et al. 435/74; 435/100 435/200 435/201 435/209 536/4.1. C12P019/44 C12P019/12 C12N015/00 C12N009/24.
- ☐ 17. [EP000359399A1](#). 14 Aug 89. 21 Mar 90. Process for the enzymatic production of dipeptides.. AASMUL-OLSEN, STIG, et al. 435/135. C07K001/00; C12P021/02.
- ☐ 18. [EP 870037B](#). Mutant form of glycosidase enzyme for oligosaccharide synthesis - has catalytically active carboxylic acid-containing amino acids, used in the preparation of oligosaccharide (s). MACKENZIE, L, et al. C07H003/04 C07H003/06 C07H015/18 C07H015/203 C07H017/02 C07H017/04 C07H017/075 C07K019/00 C12N009/24 C12N009/26 C12N009/42 C12N015/00 C12N015/09 C12N015/56 C12N015/62 C12P019/04 C12P019/12 C12P019/14 C12P019/44.

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Terms	Documents
glycosidase with nucleophile	18

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=> s glycosidase and nucleophile
L1 696 GLYCOSIDASE AND NUCLEOPHILE

=> s glycosidase (10a) nucleophile
L2 179 GLYCOSIDASE (10A) NUCLEOPHILE

=> s l2 (10a)(muta? or variant)
10 FILES SEARCHED...
L3 52 L2 (10A)(MUTA? OR VARIANT)

=> dup rem l3
PROCESSING COMPLETED FOR L3
L4 15 DUP REM L3 (37 DUPLICATES REMOVED)

=> d 1-10

L4 ANSWER 1 OF 15 MEDLINE on STN DUPLICATE 1
AN 2004496603 IN-PROCESS
DN PubMed ID: 15252054
TI Directed evolution of a glycosynthase from Agrobacterium sp. increases its
catalytic activity dramatically and expands its substrate repertoire.
AU Kim Young-Wan; Lee Seung Seo; Warren R Antony J; Withers Stephen G
CS Protein Engineering Network of Centres of Excellence of Canada, British
Columbia, Canada.
SO Journal of biological chemistry, (2004 Oct 8) 279 (41) 42787-93.
Journal code: 2985121R. ISSN: 0021-9258.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS IN-PROCESS; NONINDEXED; Priority Journals
ED Entered STN: 20041007
Last updated on STN: 20041020

L4 ANSWER 2 OF 15 MEDLINE on STN DUPLICATE 2
AN 2004039182 MEDLINE
DN PubMed ID: 14740034
TI Thioglycosynthases: double mutant glycosidases that serve as scaffolds for
thioglycoside synthesis.
AU Jahn Michael; Chen Hongming; Mullegger Johannes; Marles Jennifer; Warren R
Antony J; Withers Stephen G
CS Department of Chemistry, University of British Columbia, 2036 Main Mall,
Vancouver, B.C. V6T 1Z1, Canada.
SO Chemical communications (Cambridge, England), (2004 Feb 7) (3) 274-5.
Journal code: 9610838. ISSN: 1359-7345.
CY England: United Kingdom
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 200405
ED Entered STN: 20040124
Last updated on STN: 20040510

Entered Medline: 20040507

L4 ANSWER 3 OF 15 MEDLINE on STN DUPLICATE 3
AN 2003361724 MEDLINE
DN PubMed ID: 12859194
TI Activity of hyperthermophilic glycosynthases is significantly enhanced at acidic pH.
AU Perugino Giuseppe; Trincone Antonio; Giordano Assunta; van der Oost John; Kaper Thijs; Rossi Mose; Moracci Marco
CS Institute of Protein Biochemistry-Consiglio Nazionale delle Ricerche, Via P. Castellino 111, 80131, Naples Italy.
SO Biochemistry, (2003 Jul 22) 42 (28) 8484-93.
Journal code: 0370623. ISSN: 0006-2960.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 200310
ED Entered STN: 20030805
Last Updated on STN: 20031008
Entered Medline: 20031006

L4 ANSWER 4 OF 15 MEDLINE on STN DUPLICATE 4
AN 2002453162 MEDLINE
DN PubMed ID: 12210988
TI Specificity studies of bacillus 1,3-1,4-beta-glucanases and application to glycosynthase-catalyzed transglycosylation.
AU Fairweather Jon K; Faijes Magda; Driguez Hugues; Planas Antoni
CS Centre de Recherche sur les Macromolecules Vegetales, CNRS, Universite J. Fourier, BP 53, 38041 Grenoble Cedex 9, France.
SO Chembiochem : a European journal of chemical biology, (2002 Sep 2) 3 (9) 866-73.
Journal code: 100937360. ISSN: 1439-4227.
CY Germany: Germany, Federal Republic of
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 200307
ED Entered STN: 20020906
Last Updated on STN: 20030715
Entered Medline: 20030714

L4 ANSWER 5 OF 15 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2002:420325 HCAPLUS
DN 137:169701
TI Glycosynthases: new tools for oligosaccharide synthesis
AU Jakeman, David L.; Withers, Stephen G.
CS Department of Chemistry, University of British Columbia, Vancouver, BC, V6T 1Z1, Can.
SO Trends in Glycoscience and Glycotechnology (2002), 14(75), 13-25
CODEN: TGGLEE; ISSN: 0915-7352
PB FCCA
DT Journal; General Review
LA English/Japanese
RE.CNT 29 THERE ARE 29 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 6 OF 15 SCISEARCH COPYRIGHT (c) 2004 The Thomson Corporation. on STN DUPLICATE 5
AN 2002:473145 SCISEARCH
GA The Genuine Article (R) Number: 558CQ
TI Glycosynthases: Mutant glycosidases for glycoside synthesis
AU Williams S J; Withers S G (Reprint)
CS Univ British Columbia, Dept Chem, 2036 Main Mall, Vancouver, BC V6T 1Z1, Canada (Reprint); Univ British Columbia, Dept Chem, Vancouver, BC V6T 1Z1, Canada
CYA Canada
SO AUSTRALIAN JOURNAL OF CHEMISTRY, (MAY 2002) Vol. 55, No. 1-2, pp. 3-12.
Publisher: C S I R O PUBLISHING, 150 OXFORD ST, PO BOX 1139, COLLINGWOOD, VICTORIA 3066, AUSTRALIA.
ISSN: 0004-9425.
DT General Review; Journal
LA English
REC Reference Count: 43
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

L4 ANSWER 7 OF 15 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2002:209028 HCAPLUS
DN 137:136711
TI Engineering glycosidases for constructive purposes
AU Jakeman, David L.; Withers, Stephen G.
CS Department of Chemistry, Protein Engineering Network of Centres of
Excellence, University of British Columbia, Vancouver, Can.
SO Special Publication - Royal Society of Chemistry (2002), 275(Carbohydrate
Bioengineering), 3-8
CODEN: SROCD0; ISSN: 0260-6291
PB Royal Society of Chemistry
DT Journal; General Review
LA English
RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 8 OF 15 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on
STN
AN 2001:567023 BIOSIS
DN PREV200100567023
TI New approaches to enzymatic oligosaccharide synthesis: Glycosynthases.
AU Withers, Stephen G. [Reprint author]
CS Department of Chemistry, University of British Columbia, Vancouver, BC,
V6T 1Z1, Canada
SO Glycobiology, (October, 2001) Vol. 11, No. 10, pp. 934. print.
Meeting Info.: 6th Annual Conference of the Society for Glycobiology. San
Francisco, California, USA. November 14-17, 2001.
ISSN: 0959-6658.
DT Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
LA English
ED Entered STN: 12 Dec 2001
Last Updated on STN: 25 Feb 2002

L4 ANSWER 9 OF 15 MEDLINE on STN DUPLICATE 6
AN 2001690422 MEDLINE
DN PubMed ID: 11738173
TI Dissection of nucleophilic and acid-base catalysis in glycosidases.
AU Zechel D L; Withers S G
CS Protein Engineering Network of Centres of Excellence of Canada and
Department of Chemistry, University of British Columbia, Vancouver,
Canada.
SO Current opinion in chemical biology, (2001 Dec) 5 (6) 643-9. Ref: 33
Journal code: 9811312. ISSN: 1367-5931.
CY England: United Kingdom
DT Journal; Article; (JOURNAL ARTICLE)
General Review; (REVIEW)
(REVIEW, TUTORIAL)
LA English
FS Priority Journals
EM 200202
ED Entered STN: 20011213
Last Updated on STN: 20020206
Entered Medline: 20020205

L4 ANSWER 10 OF 15 MEDLINE on STN DUPLICATE 7
AN 2001267758 MEDLINE
DN PubMed ID: 11358691
TI Directed evolution of new glycosynthases from Agrobacterium
beta-glucosidase: a general screen to detect enzymes for oligosaccharide
synthesis.
AU Mayer C; Jakeman D L; Mah M; Karjala G; Gal L; Warren R A; Withers S G
CS Protein Engineering Network of Centres of Excellence of Canada, Department
of Chemistry, University of British Columbia, Vancouver.
SO Chemistry & biology, (2001 May) 8 (5) 437-43.
Journal code: 9500160. ISSN: 1074-5521.
CY England: United Kingdom
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 200109
ED Entered STN: 20010917
Last Updated on STN: 20010917
Entered Medline: 20010913

=> d 9, 10 ab

L4 ANSWER 9 OF 15 MEDLINE on STN DUPLICATE 6
AB A startling array of added anions have been observed to function as replacement catalytic ***nucleophiles*** in ***mutant*** ***glycosidases***, including formate, azide, fluoride and other halides. Likewise, the mechanism of acid-base catalysis is somewhat plastic. The carboxylic acids can be substituted by a sulfenic acid or by ascorbate, and the effective acid strength enhanced by the introduction of strong hydrogen bonds. These studies provide an interesting bridge between enzymes and models thereof.

L4 ANSWER 10 OF 15 MEDLINE on STN DUPLICATE 7
AB BACKGROUND: Oligosaccharide synthesis is becoming increasingly important to industry as diverse therapeutic roles for these molecules are discovered. The chemical synthesis of oligosaccharides on an industrial scale is often prohibitively complex and costly. An alternative, that of enzymatic synthesis, is limited by the difficulty of obtaining an appropriate enzyme. A general screen for enzymes that catalyze the synthesis of the glycosidic bond would enable the identification and engineering of new or improved enzymes. RESULTS: Glycosynthases are ***nucleophile*** ***mutants*** of retaining ***glycosidases*** that efficiently catalyze the synthesis of the glycosidic linkage by condensing an activated glycosyl fluoride donor with a suitable acceptor sugar. A novel agar plate-based coupled-enzyme screen was developed (using a two-plasmid system) and used to select an improved glycosynthase from a library of mutants. CONCLUSIONS: Plate-based coupled-enzyme screens of this type are extremely valuable for identification of functional synthetic enzymes and can be applied to the evolution of a range of glycosyl transferases.

=> d 11-15

L4 ANSWER 11 OF 15 MEDLINE on STN DUPLICATE 8
AN 2000176961 MEDLINE
DN PubMed ID: 10714501
TI A novel thermophilic glycosynthase that effects branching glycosylation.
AU Trincone A; Perugino G; Rossi M; Moracci M
CS Istituto per la Chimica di Molecole di Interesse Biologico, C.N.R., Naples, Italy.. atrincone@icmib.na.cnr.it
SO Bioorganic & medicinal chemistry letters, (2000 Feb 21) 10 (4) 365-8. Journal code: 9107377. ISSN: 0960-894X.
CY ENGLAND: United Kingdom
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 200005
ED Entered STN: 20000525
Last Updated on STN: 20000525
Entered Medline: 20000515

L4 ANSWER 12 OF 15 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2000:327102 HCAPLUS
TI Turbo-glycosynthases: Enhanced glycosylation activity obtained by substituting serine at the nucleophile position in retaining glycosidases.
AU Zechel, David L.; Mayer, Christoph; Nashiru, Oyekanmi; Reid, Stephen P.; Warren, R. Antony J.; Withers, Stephen G.
CS Department of Chemistry, University of British Columbia, Vancouver, BC, V6T 1Z1, Can.
SO Book of Abstracts, 219th ACS National Meeting, San Francisco, CA, March 26-30, 2000 (2000), BIOL-061 Publisher: American Chemical Society, Washington, D. C. CODEN: 69CLAC
DT Conference; Meeting Abstract
LA English

L4 ANSWER 13 OF 15 MEDLINE on STN DUPLICATE 9
AN 2000115459 MEDLINE
DN PubMed ID: 10648808
TI The E358S mutant of Agrobacterium sp. beta-glucosidase is a greatly improved glycosynthase.
AU Mayer C; Zechel D L; Reid S P; warren R A; Withers S G
CS Protein Engineering Network of Centres of Excellence, Department of Chemistry, University of British Columbia, Vancouver, B.C., Canada.
SO FEBS letters, (2000 Jan 21) 466 (1) 40-4.

Journal code: 0155157. ISSN: 0014-5793.
CY Netherlands
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 200002
ED Entered STN: 20000309
Last Updated on STN: 20000309
Entered Medline: 20000222

L4 ANSWER 14 OF 15 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on
STN
AN 2000:122871 BIOSIS
DN PREV200000122871
TI The E358S mutant of Agrobacterium sp. beta-glucosidase is a greatly
improved glycosynthase.
AU Mayer, Christoph; Zeche, David L.; Reid, Stephen P.; Warren, R. Antony
J.; Withers, Stephen G. [Reprint author]
CS Protein Engineering Network of Centres of Excellence, Department of
Chemistry, University of British Columbia, Vancouver, B.C., V6T 1Z1,
Canada
SO FEBS Letters, (Jan. 21, 2000) vol. 469, No. 1, pp. 40-44. print.
CODEN: FEBLAL. ISSN: 0014-5793.
DT Article
LA English
ED Entered STN: 5 Apr 2000
Last Updated on STN: 3 Jan 2002

L4 ANSWER 15 OF 15 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1998:716686 HCAPLUS
DN 130:77826
TI Restoration of the Activity of Active-Site Mutants of the
Hyperthermophilic .beta.-Glycosidase from Sulfolobus solfataricus:
Dependence of the Mechanism on the Action of External Nucleophiles
AU Moracci, Marco; Trincone, Antonio; Perugino, Giuseppe; Ciaramella, Maria;
Rossi, Mose
CS Institute of Protein Biochemistry and Enzymology, Consiglio Nazionale
delle Ricerche, Naples, 80125, Italy
SO Biochemistry (1998), 37(49), 17262-17270
CODEN: BICHAW; ISSN: 0006-2960
PB American Chemical Society
DT Journal
LA English
RE.CNT 31 THERE ARE 31 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

=> dis his

(FILE 'HOME' ENTERED AT 22:26:50 ON 10 NOV 2004)

FILE 'MEDLINE, SCISEARCH, LIFESCI, BIOTECHDS, BIOSIS, EMBASE, HCAPLUS,
NTIS, ESBIODBASE, BIOTECHNO, WPIDS' ENTERED AT 22:27:08 ON 10 NOV 2004

L1 696 S GLYCOSIDASE AND NUCLEOPHILE
L2 179 S GLYCOSIDASE (10A) NUCLEOPHILE
L3 52 S L2 (10A)(MUTA? OR VARIANT)
L4 15 DUP REM L3 (37 DUPLICATES REMOVED)

=> log h

COST IN U.S. DOLLARS

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ENTRY

SESSION

FULL ESTIMATED COST

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30.99

SESSION WILL BE HELD FOR 60 MINUTES

STN INTERNATIONAL SESSION SUSPENDED AT 22:34:20 ON 10 NOV 2004